Claims:

1.   A method for creating a measurement report (400) among a plurality of stations (201) in a wireless local area network (WLAN), comprising the steps of:

5   receiving (301) by a measurement capable station (201) of said plurality of stations (201) a measurement request for at least one measurement report element (500) to be made at a given time;

recording by the measurement capable station (201) said at least one measurement report element (500);

10   creating by the measurement capable station (201) a measurement report (400) comprising said at least one measurement report element (500) as one of measurement report elements contained therein (405);

respectively time-stamping (404, 504) with an absolute time reference at least one of said at least one recorded measurement report element (500) and said measurement

15   report (400); and

transmitting (308) by the measurement capable station said created measurement report.

2.   The method of claim 1, wherein said time-stamping step further comprises

20   the step of setting by the measurement capable station each said absolute time reference to a time synchronization function (TSF) timer value (306).

3.   The method of claim 1, further comprising the steps of:

if at least one measurement element has been time-stamped with an absolute time

25   reference (504),

determining by the measurement capable station (201) an earliest said absolute time reference (504) of a measurement report element, and

setting by the measurement capable station (201) said measurement report time-stamp (404) to said determined earliest absolute time reference of a measurement report element.

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4.   The method of claim 3, wherein said time-stamping step further comprises the step of setting by the measurement capable station (201) each said absolute time to a time synchronization function (TSF) timer value (306).

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5.   The method of claim 1, wherein said creating step further comprises the step of including in said measurement report a plurality of fields formatted as one of

	Category 401	Action 402	Dialog Token 403	reserved 404	Measurement Report Elements 405
Octets:	1	1	1	8	variable

and

	Category 401	Action 402	Dialog Token 403	Time Stamp 404	Measurement Report Elements 405
Octets:	1	1	1	8	variable

15   the fields being -

a Category field (401) that is set equal to a value indicating a Radio Measurement category or Spectrum Management category,

an Action field (402) that is set equal to a value indicating a measurement report

(500) is contained therein,

a Dialog Token field (403) that is set equal to a value in a corresponding

measurement request or, if the measurement report is not being transmitted in response to a

5   measurement request, is set equal to zero,

an optional Time Stamp field that contains the value of an absolute timer reference

(306) at the time when the measurement capable station performed the first measurement

of the measurement report elements (405) reported in the measurement report (400), and

a Measurement Report Elements field (405) that contains a number of said

10   measurement report elements 500, said number being at least one, said measurement report

elements field (404) having a combined length and a plurality of sub-fields and being

formatted as

	Element ID 501	Length 502	Measurement Token 503	Time Stamp 504	Measurement Mode 505	Measurement Type 506	Measurement Report 507
Octets:	1	1	1	8	1	1	variable

15   the subfields being -

an Element ID subfield (501) that is set to an identifier assigned to the requested

Measurement Report,

a Length subfield (502) that is variable with a minimum value of 3,

20   a Measurement Token subfield (503) that is set equal to a Measurement Token in a

corresponding Measurement Request Element of a measurement request or if the

Measurement Report Element (500) is being sent autonomously by the measurement

capable station then the Measurement Token (503) field is set equal to zero,

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an optional Time-Stamp field (505) that is set to the value of an absolute timer

(306) when the reported measurement is started,

a Measurement Mode subfield (505) is a bit field that qualifies the type of

measurement request being made,

5   a Measurement Type subfield (506) that is set to an identifier that identifies the type

of a measurement request, and

a Measurement Report field (507) comprising at least one Measurement Report

Element (500),

wherein, at least one of the Measurement Report Time Stamp (404) and a Measurement

10   Element Report Time-Stamp (504) is present.

6.   The method of claim 5, wherein:

the WLAN is an IEEE 802.11 WLAN;

15   the Element Id (501) is set to a unique identifier specified by an IEEE 802.11

standard;

each Time Stamp field (404, 504) is a time synchronization function (TSF) timer

value (306); and

the combined length of the measurement report elements (405) is less than or equal

20   to the maximum allowed medium access control (MAC) management protocol data unit

(MMPDU) size.

7.   A method for creating an autonomous measurement report (400) having at

least one measurement report element (500), among a plurality of stations (201) in a

25   wireless local area network, comprising the steps of:

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recording by a measurement capable station (201) of said plurality of stations (201) at least one pre-determined measurement report element (500);

optionally time-stamping with an absolute time reference by the measurement capable station (201) said at least one recorded measurement report element;

5   creating by the measurement capable station an autonomous measurement report (400) comprising said at least one measurement report element (500);

optionally time-stamping with an absolute time reference of the earliest·time of a measurement report element contained therein said autonomous measurement report (400), and

10   transmitting (308) by the measurement capable station said autonomous measurement report (400),

wherein, at least one of said autonomous measurement report time-stamp (504) and said at least one measurement report element time-stamp (404) is included in said autonomous measurement report (400).

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8.   The method of claim 7, wherein each said time-stamping step further comprises the step of setting by the measurement capable station (201) each said absolute time-stamp (404, 504) to a time synchronization function (TSF) timer value.

20   9.   A method for ensuring correctness of a time reference of a requested measurement among a plurality of stations (STAs) (201) in a wireless local area network (WLAN), comprising the steps of:

transmitting (308) by a first station (201) a request for at least one time-stamped measurement report element to be performed at a given time;

receiving (301) by a second station both the measurement request and a corresponding measurement report (400) comprising the requested at least one measurement report element (500) and at least one time-stamp (404, 504) comprising an absolute time reference of when the measurement (507) recorded therein was done;

5   comparing by the second station (201) the given time of the measurement request with the at least one time-stamp (404, 504) to determine correctness of the time-stamp.

10.   The method of claim 9, wherein said receiving step further comprises the step of receiving in said measurement report (400) a plurality of fields formatted as one of

	Category 401	Action 402	Dialog Token 403	reserved 404	Measurement Report Elements 405
Octets:	1	1	1	8	variable

and

	Category 401	Action 402	Dialog Token 403	Time Stamp 404	Measurement Report Elements 405
Octets:	1	1	1	8	variable

the fields being –

15   a Category field (401) that is set equal to a value indicating a Radio Measurement category or Spectrum Management category;

an Action field (402) that is set equal to a value indicating a measurement report is contained therein;

a Dialog Token field (403) that is set equal to a value in a corresponding

measurement request or, if the measurement report is not being transmitted in response to a

measurement request, is set equal to zero;

an optional Time Stamp field (404) that contains the value of a timer (306) at the

5   time when the measurement capable station started measuring the first reported

measurement;

a Measurement Report Elements (405) field that contains a number of said

measurement report elements (500), said number being at least one, said Measurement

Report Elements field (405) having a combined length and a plurality of subfields and

10   being formatted as

	Element ID 501	Length 502	Measurement Token 503	Time Stamp 504	Measurement Mode 505	Measurement Type 506	Measurement Report 507
Octets:	1	1	1	8	1	1	variable

the subfields being –

an Element ID subfield (501) that is set to an identifier assigned to the requested

15   Measurement Report,

a Length subfield (502) that is variable with a minimum value of 3,

a Measurement Token subfield (503) that is set equal to the Measurement Token in

the corresponding Measurement Request element or if the Measurement Report element

(500) is being sent autonomously by the measurement capable station (201) then the

20   Measurement Token field (503) is set equal to zero,

an optional Time-Stamp field (505) that is set to the value of an absolute timer

(306) when the reported measurement is started for each measurement element reported in

a Measurement Report Frame,

a Measurement Mode field (505) is a bit field that qualifies the type of measurement report being made,

a Measurement Type field (506) that is set to a number that identifies the type of a measurement being reported; and

5   a Measurement Report field (507) that contains the reported measurement,

wherein at least one of the Measurement Report Time Stamp and Measurement Element Report Time Stamps is present.

11.   The method of claim 10, wherein:

10   the WLAN is an IEEE 802.11 WLAN;

the Element Id (501) is set to a unique identifier set by an IEEE 802.11 standard;

each said Time Stamp (504) is a time synchronization function (TSF) timer value (306); and

the combined length of the measurement report elements is less than or equal to the

15   maximum allowed medium access control (MAC) management protocol data unit (MMPDU) size.

12.   The method of claim 10, wherein said receiving (301) step further comprises the step of receiving a measurement report having each said Time Stamp (404,

20   405) set using a time synchronization function (TSF) timer value (306).

13.   An apparatus configured for resource measurement among a plurality of stations in a wireless local area network (WLAN), comprising:

a receiver (301) for receiving an incoming signal;

a measurement acquisition circuit (303) that measures resources of said incoming

signal received therein as at least one measurement report element (500);

a timer (306) that provides an absolute time reference;

a control processor (305), coupled to said measurement acquisition circuit (303)

5   and said timer (306) and beginning at a predetermined absolute time, configured to acquire

at least one measurement report element of said incoming signal and optionally associate

one of (1) an absolute time reference (306) of the start of the first measurement reported

(500) within a measurement report (400) as a time-stamp (404) and (2) an absolute time

reference (306) of the start of each measurement report element reported therein (507) with

10   a measurement report element time-stamp (504).

14.   The apparatus of claim 13, further comprising:

a memory (304), coupled to said control processor (305) to store said obtained

measurement report elements (500) and optionally said associated measurement report

15   element time-stamps (504); and

wherein, said control processor (305) is further configured to compare the

predetermined absolute time with at least one said absolute time-stamp (404, 504) to

determine correctness of said at least one absolute time-stamp (404, 504).

20   15.   The apparatus of claim 14, further comprising a transmitter that transmits a

measurement report comprising a plurality of fields formatted as one of

	Category 401	Action 402	Dialog Token 403	reserved 404	Measurement Report Elements 405
Octets:	1	1	1	8	Variable

and

	Category	Action	Dialog Token	Time Stamp	Measurement Report Elements
	401	**402**	**403**	**404**	**405**
Octets:	1	1	1	8	variable

the fields being –

a Category field (401) that is set equal to a value indicating a Radio Measurement category or Spectrum Management category;

an Action field (402) that is set equal to a value indicating a measurement report is contained therein;

a Dialog Token field (403) that is set equal to a value in a corresponding measurement request or, if the measurement report is not being transmitted in response to a measurement request, is set equal to zero;

an optional Time Stamp field (404) that contains the value of a timer (306) at the time when the measurement capable station started measuring the first reported measurement;

a Measurement Report Elements 405 field that contains a number of said measurement report elements (500), said number being at least one, said Measurement Report Elements field (405) having a combined length and a plurality of subfields and being formatted as

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	Element ID 501	Length 502	Measurement Token 503	Time Stamp 504	Measurement Mode 505	Measurement Type 506	Measurement Report 507
Octets:	1	1	1	8	1	1	variable

the subfields being -

an Element ID subfield (501) that is set to an identifier assigned to the requested Measurement Report,

a Length subfield (502) that is variable with a minimum value of 3,

a Measurement Token subfield (503) that is set equal to the Measurement Token in the corresponding Measurement Request element or if the Measurement Report element (500) is being sent autonomously by the measurement capable station (201) then the Measurement Token field (503) is set equal to zero,

an optional Time-Stamp field (505) that is set to the value of an absolute timer (306) when the reported measurement is started for each measurement element reported in a Measurement Report Frame,

a Measurement Mode field (505) is a bit field that qualifies the type of measurement report being made,

, a Measurement Type field (506) that is set to a number that identifies the type of a measurement being reported; and

a Measurement Report field (507) that contains the reported measurement, wherein at least one of the Measurement Report Time Stamp and Measurement Element Report Time Stamps is present.

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16.   The apparatus of claim 15, wherein:

the WLAN is an IEEE 802.11 WLAN;

the Element Id (501) is set to a unique identifier specified by an IEEE 802.11

5   standard;

each said Time-Stamp (404, 504) is a time synchronization function (TSF) timer

value (306); and

the combined length of the measurement report elements is less than or equal to the

maximum allowed medium access control (MAC) management protocol data unit

10   (MMPDU) size.

17.   The apparatus of claim 15, further comprising a receiver (301) for receiving

a measurement request comprising at least one measurement request element to be

measured and reported as a measurement report element (500) and the predetermined time

15   to start measuring.

18.   The apparatus of claim 17, wherein said measurement request is transmitted

by a station (201) of said plurality of stations (201).

20   19.   The apparatus of claim 17, wherein said measurement request is transmitted

by an access point (200) of said plurality of stations (201).